

CLAIMS

1. A method of decoding variable-length encoded signals (IS) including codewords (CW) from a codebook, said codewords (CW) having associated respective sets of sign bits (SB), characterized in that it includes the steps of:

- providing a signed decoding codebook including extended signed codewords (CW'), each extended codeword (CW') including a respective codeword (CW) in said codebook plus the associated sign bit set (SB), and
- decoding said variable-length encoded codewords (CW) by means of said signed decoding codebook, whereby said codewords (CW) are decoded together with the sign bit set (SB) associated therewith.

2. The method of claim 1, characterized in that it includes the steps of:

- defining a threshold value (k) for the length of said codewords, wherein said threshold value (k) partitions said codewords in short and long codewords, respectively, and
- decoding at least said short codewords by means of a lookup process against a respective lookup table (LUT1) whose entries are selected to correspond to the extended codewords (CW') in said signed decoding codebook.

3. The method of claim 2, characterized in that, said codewords (CW) in said codebook having a maximum length (N), said threshold value (k) is selected in the vicinity of half said maximum length (N/2).

4. The method of claim 2, characterized in that it includes the step of decoding said long codewords by means of a multi-step lookup process, said multi-step lookup process including:

- a first lookup step to a first entry in a first lookup table (LUT1) to retrieve an offset value, and  
- at least one second lookup step to at least one second entry in at least one second lookup table (LUT2), said second entry being identified by means of said offset value.

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10 5. The method of claim 4, characterized in that it includes the step of arranging said first lookup table (LUT1) and said at least one second lookup table (LUT2) as nested lookup tables in a container table (CNR).

6. The method of claim 4, characterized in that said first entry to said first lookup table (LUT1) includes:

15 - a first field, identifying the codeword to be decoded as a short codeword or a long codeword, respectively,  
- a second field containing:  
- the length of said codeword if said codeword is either of a short codeword or a long codeword completely decoded, or  
20 - said offset value if said codeword is a long codeword still to be partly decoded, and  
- a third field including the completely decoded symbols.

25 7. A system for decoding variable-length encoded signals including codewords (CW) from a codebook, said codewords (CW) having associated respective sets of sign bits (SB), characterized in that it includes:

30 - at least one memory (14) having stored therein data items defining a signed decoding codebook including extended signed codewords (CW'), each extended codeword (CW') including a respective codeword (CW) in said codebook plus the associated sign bit set (SB), and

- a processing unit (12) adapted to receive variable-length encoded signals (IS) and to interact with said at least one memory (14) to decode said variable-length encoded codewords (CW) by means of said signed decoding codebook stored in said at least one memory (14), whereby said codewords (CW) are decoded together with the sign bit set (SB) associated therewith.

8. The system of claim 7, characterized in that:

10 - said memory (14) includes stored data items defining a respective lookup table (LUT1) whose entries are selected to correspond to the extended codewords (CW') in said signed decoding codebook, and

- said processing unit (112) is configured for:

15 - defining a threshold value (k) for the length of said codewords, wherein said threshold value (k) partitions said codewords in short and long codewords, respectively, and

20 - decoding at least said short codewords by means of a lookup process against said respective lookup table (LUT1).

9. The system of claim 8, characterized in that, said codewords (CW) in said codebook having a maximum length (N), said threshold value (k) is in the vicinity of half said maximum length (N/2).

10. The system of claim 8, characterized in that:

- said memory (14) includes stored data items defining:

30 - a first lookup table (LUT1) including a set of entries leading to respective offset values, and

- at least one second lookup table (LUT2), including second entries identified by said respective offset values,

- said processing unit (12) is configured for decoding said long codewords by means of a multi-step lookup process, said multi-step lookup process including:

- 5           - a first lookup step to a first entry in said first lookup table (LUT1) to retrieve an offset value, and
- at least a second lookup step to at least a second entry in said at least one second lookup
- 10       table (LUT2), said second entry being identified by means of said offset value.

11. The system of claim 10, characterized in that said memory (14) is arranged as a container table (CNR) including said first lookup table (LUT1) and said at

15       least one second lookup table (LUT2) as nested lookup tables.

12. The system of claim 10, characterized in that said first entry to said first lookup table (LUT1) includes:

- 20       - a first field, identifying the codeword to be decoded as a short codeword or a long codeword, respectively,
- a second field containing:
  - the length of said codeword if said
  - 25       codeword is either of a short codeword or a long codeword completely decoded, or
  - said offset value is said codeword is a long codeword still to be partly decoded, and
  - a third field including the completely decoded
  - 30       symbols.

13. A computer program product loadable in the memory of at least one computer and including software code portions for performing the method of any of claims 1 to 6.